



VASHON ISLAND SCHOOL DISTRICT

MATHEMATICS GUIDE

Pre-kindergarten and Kindergarten

Revised June 2006

Pre-Kindergarten

Strand	Introduced/Practiced During Year	Delivery Methods	Year-end Proficiencies	State GLEs
Number Sense	<p>Match number symbols 1, 2, and 3 to groups of objects</p> <p>Count the objects in a group (up to five)</p> <p>Make groups of up to five objects</p> <p>Math number symbols 1-5 to groups of objects</p> <p>Identify and describe quantities in terms of <i>more</i> or <i>less (fewer)</i></p> <p>Place objects in a stated order: first, second, third, last</p> <p>Say the numbers one to ten in sequence</p> <p>Match number symbols 1-6 to groups of objects</p> <p>Place pictures showing one to six objects in correct order</p>	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Match number symbols 1, 2, and 3 to groups of objects</p> <p>Count the objects in a group (up to five)</p> <p>Make groups of up to five objects</p> <p>Math number symbols 1-5 to groups of objects</p> <p>Identify and describe quantities in terms of <i>more</i> or <i>less (fewer)</i></p> <p>Place objects in a stated order: first, second, third, last</p> <p>Say the numbers one to ten in sequence</p> <p>Match number symbols 1-6 to groups of objects</p> <p>Place pictures showing one to six objects in correct order</p>	NONE AT THIS TIME
Measurement	<p>Sequence events in a logical order</p> <p>Identify and describe an object as <i>heavy</i> or <i>light</i></p> <p>Understand and use language such as <i>empty, full, more, and less</i> in relation to capacity</p>	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Sequence events in a logical order</p> <p>Identify and describe an object as <i>heavy</i> or <i>light</i></p> <p>Understand and use language such as <i>empty, full, more, and less</i> in relation to capacity</p>	
Geometric Sense	<p>Use language describing the position of an object such as <i>under, over, in back of, in front of, next to, outside, inside</i></p> <p>Understand and use language for describing and informally naming 3-D shapes such as <i>flat sides, round/not round, box shape, ball shape, can shape</i></p> <p>Match 3-D shapes to pictures of shapes</p> <p>Identify a <i>triangle, square, and circle</i>, and understand and use language for describing these shapes</p>	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Use language describing the position of an object such as <i>under, over, in back of, in front of, next to, outside, inside</i></p> <p>Understand and use language for describing and informally naming 3-D shapes such as <i>flat sides, round/not round, box shape, ball shape, can shape</i></p> <p>Match 3-D shapes to pictures of shapes</p> <p>Identify a <i>triangle, square, and circle</i>, and understand and use language for describing these shapes</p>	
Probability and Statistics	<p>Sort objects according to a specified attribute or sorting rule</p> <p>Describe how a group of objects has been sorted</p> <p>Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting</p> <p>Order objects by a given attribute and describe the order</p>	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Sort objects according to a specified attribute or sorting rule</p> <p>Describe how a group of objects has been sorted</p> <p>Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting</p> <p>Order objects by a given attribute and describe the order</p>	
Algebraic Sense	<p>Recognize and name colors</p> <p>Use the terms <i>same</i> and <i>different</i> in relation to color.</p> <p>Use the terms <i>same</i> and <i>different</i> in relation to texture</p> <p>Use the language of <i>big</i> and <i>small</i></p> <p>Use the language of <i>short, long, and tall</i></p> <p>Use the language of <i>wide</i> and <i>narrow</i></p>	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Recognize and name colors</p> <p>Use the terms <i>same</i> and <i>different</i> in relation to color.</p> <p>Use the terms <i>same</i> and <i>different</i> in relation to texture</p> <p>Use the language of <i>big</i> and <i>small</i></p> <p>Use the language of <i>short, long, and tall</i></p> <p>Use the language of <i>wide</i> and <i>narrow</i></p>	

	<p>Sort objects according to a specified attribute or sorting rule Describe how a group of objects has been sorted Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting Order objects by a given attribute and describe the order Explain and describe the rule used to order a set of objects by size Demonstrate pattern through actions Identify and describe patterns as stripes and spots Participate in creating a pattern Describe and continue a repeating pattern Create a repeating pattern</p>		<p>Sort objects according to a specified attribute or sorting rule Describe how a group of objects has been sorted Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting Order objects by a given attribute and describe the order Explain and describe the rule used to order a set of objects by size Demonstrate pattern through actions Identify and describe patterns as stripes and spots Participate in creating a pattern Describe and continue a repeating pattern Create a repeating pattern</p>	
Problem Solving	<p>Create a repeating pattern Order objects by a given attribute and describe the order Describe and continue a repeating pattern</p>	<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>Create a repeating pattern Order objects by a given attribute and describe the order Describe and continue a repeating pattern</p>	
Reasoning	<p>Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting</p>	<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting</p>	
Communication	<p>Use language describing the position of an object such as <i>under, over, in back of, in front of, next to, outside, inside</i> Use the language of <i>big</i> and <i>small</i> Use the language of <i>short, long, and tall</i> Use the language of <i>wide</i> and <i>narrow</i> Describe how a group of objects has been sorted Explain and describe the rule used to order a set of objects by size Demonstrate pattern through actions</p>	<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>Use language describing the position of an object such as <i>under, over, in back of, in front of, next to, outside, inside</i> Use the language of <i>big</i> and <i>small</i> Use the language of <i>short, long, and tall</i> Use the language of <i>wide</i> and <i>narrow</i> Describe how a group of objects has been sorted Explain and describe the rule used to order a set of objects by size Demonstrate pattern through actions</p>	
Connections		<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>		

Kindergarten

Kindergarten	Introduced/Practiced During Year	Delivery Methods	Year-end Proficiencies	State GLEs
<p>Number Sense</p>	<p>Explain how numbers are used and give examples (e.g., to count, to order). [CU] Show that the last count word names the quantity of the set (cardinality) (i.e., when counting fingers on a hand “one, two, three, four, five,” the “five” says how many fingers there are). [CU, MC] Match a group of objects or pictures to a given number Recognize and describe a pattern Copy and extend a pattern Create a simple pattern Identify the base ten digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. Read the number words <i>zero to nine</i> Write the numerals 0 to 9 Represent a number to at least 10 in different ways (e.g., numerals, spoken words, pictures, physical models). [CU] Match quantities, numerals, and number words (to 9) Identify the ordinal position of objects at least through tenth (e.g., first, second ...). Use comparative language (e.g., less than, more than, equal to) to compare numbers to at least 20. [CU] Order number words (to 9) Count backward (from 9) Describe a quantity as two groups Show the parts of a total in different ways Combine two groups Identify missing numbers in a sequence (to 10) Count forward from a number other than one Combine two groups and find the total (addition) Identify penny, nickel, and dime Solve simple problems using pennies Find the results when objects are separated from a group (subtraction) Order quantities and numerals (to 15) Combine groups and count to find the total (to 15) Count to at least 31. Recognize numerals to 20 Count items in a collection (to 20) Represent numbers (to 20)</p>	<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>Count to at least 31. Represent a number to at least 10 in different ways (e.g., numerals, spoken words, pictures, physical models). [CU] Show that the last count word names the quantity of the set (cardinality) (i.e., when counting fingers on a hand “one, two, three, four, five,” the “five” says how many fingers there are). [CU, MC] Identify the base ten digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. Explain how numbers are used and give examples (e.g., to count, to order). [CU] Tell what number comes before or after a given number. Use comparative language (e.g., less than, more than, equal to) to compare numbers to at least 20. [CU] Use a known quantity to at least 10 (benchmark) to compare sets (e.g., sets of counters). Identify the ordinal position of objects at least through tenth (e.g., first, second ...). Express stories involving addition (e.g., join) with models, pictures, and symbols. [CU, MC] Use addition in the classroom environment (e.g., tables and chairs in the classroom). [MC]</p>	<p>1.1.1</p> <p>1.1.2</p> <p>1.1.5</p>

	<p>Describe the location of an object relative to another (e.g., in, out, over, under, behind, above, below, next to, etc.). [CU]</p> <p>Identify where a three-dimensional object is located relative to another given object (e.g., where the eraser is relative to the desk).</p> <p>Place objects in a stated position Identify and name 3-D shapes Describe the characteristics of a 3-D shape Identify and name shapes Represent 2-D shapes Recognize that a square is a rectangle with four equal sides</p> <p>Describe familiar objects based on characteristics (e.g., big, small, like a box). [CU, MC]</p> <p>Sort objects in their environment by characteristics (e.g., cans, balls, boxes, red, blue). [MC]</p> <p>Describe objects using comparative language (e.g., bigger, taller, shorter, smaller). [CU]</p>	<p>Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>Sort objects in their environment by characteristics (e.g., cans, balls, boxes, red, blue). [MC]</p> <p>Describe objects using comparative language (e.g., bigger, taller, shorter, smaller). [CU]</p> <p>Describe the location of an object relative to another (e.g., in, out, over, under, behind, above, below, next to, etc.). [CU]</p> <p>Identify where a three-dimensional object is located relative to another given object (e.g., where the eraser is relative to the desk).</p>	1.3.3
Probability and Statistics	<p>Describe and order simple events Sort and classify objects using more than one attribute</p> <p>Use physical objects or pictures to build bar graphs. [CU]</p> <p>Organize objects into groups before counting them. [RL]</p> <p>Answer questions about graphs (e.g., how many cats? How many dogs?). [CU]</p>	<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>Use physical objects or pictures to build bar graphs. [CU]</p> <p>Organize objects into groups before counting them. [RL]</p> <p>Answer questions about graphs (e.g., how many cats? How many dogs?). [CU]</p>	1.4.3 1.4.5
Algebraic Sense	<p>Recognize and identify colors Recognize and describe same and different</p> <p>Recognize, describe, and compare the attributes of an object</p> <p>Sort and classify objects using a teacher-directed rule</p> <p>Sort and classify objects using a child-selected rule</p> <p>Sort and classify objects using more than one attribute</p> <p>Determining simple sorting rules</p> <p>Sort, classify, and order objects by size</p> <p>Describe the way in which an object's measure has changed (qualitative change)</p> <p>Solve simple logic problems</p> <p>Sort and classify shapes</p> <p>Differentiate a pattern from a non-pattern</p> <p>Describe qualitative and quantitative change</p>	<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>Identify and extend patterns (e.g., ABAB, green-green-blue, counting). [RL]</p> <p>Create an AB pattern.</p> <p>Use physical objects to model language (e.g., same, different, equal, not equal, more, less). [CU]</p> <p>Model/act out story problems to solve whole number equations and inequalities (e.g., there are three kids and two have three crayons, one has two crayons. How can you make it so all kids have the same number of crayons?). [CU, MC]</p>	1.5.1 1.5.3

	<p>Identify and extend patterns (e.g., ABAB, green-green-blue, counting). [RL] Create an AB pattern. Use physical objects to model language (e.g., same, different, equal, not equal, more, less). [CU] Model/act out story problems to solve whole number equations and inequalities (e.g., there are three kids and two have three crayons, one has two crayons. How can you make it so all kids have the same number of crayons?). [CU, MC]</p>			
Problem Solving	<p>State information presented in teacher-led discussion to determine if there is a problem that needs an answer (e.g., a classroom activity requires a playground ball for each student. There are some balls available in the classroom). State the problem in own words (e.g., are there enough playground balls? If not, how do we get enough for the class?). Generate questions that would need to be answered in order to solve the problem (e.g., how many balls are in the classroom? How many more do we need?). Identify known and unknown information with teacher guidance (e.g., known – the number of students in the class, and the number of balls needed; unknown – the number of additional playground balls needed). [1.1.5] Gather and organize categorical data (e.g., in a teacher-led activity, create a two-column chart – one column for student names and tally marks in the other to represent which students are assigned a ball). [1.4.3] Use appropriate tools to find a solution (e.g., draw pictures, use chart to count how many empty spaces there are for the playground balls). [1.1.1, 1.1.5] Recognize when an approach is unproductive and try a new approach.</p>	<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>State information presented in teacher-led discussion to determine if there is a problem that needs an answer (e.g., a classroom activity requires a playground ball for each student. There are some balls available in the classroom). State the problem in own words (e.g., are there enough playground balls? If not, how do we get enough for the class?). Generate questions that would need to be answered in order to solve the problem (e.g., how many balls are in the classroom? How many more do we need?). Identify known and unknown information with teacher guidance (e.g., known – the number of students in the class, and the number of balls needed; unknown – the number of additional playground balls needed). [1.1.5] Gather and organize categorical data (e.g., in a teacher-led activity, create a two-column chart – one column for student names and tally marks in the other to represent which students are assigned a ball). [1.4.3] Use appropriate tools to find a solution (e.g., draw pictures, use chart to count how many empty spaces there are for the playground balls). [1.1.1, 1.1.5] Recognize when an approach is unproductive and try a new approach.</p>	<p>2.1.1</p> <p>2.2.1</p> <p>2.2.2</p>
Reasoning	<p>Restate understanding of the situation (e.g., each student requires a playground ball; there are not enough in the classroom). Predict a numerical solution for a problem (e.g., guess how many more playground balls are needed). Use tools (e.g., tally marks, physical models, words) to check for reasonableness of an answer</p>	<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>Restate understanding of the situation (e.g., each student requires a playground ball; there are not enough in the classroom). Predict a numerical solution for a problem (e.g., guess how many more playground balls are needed). Use tools (e.g., tally marks, physical models, words) to check for reasonableness of an answer</p>	<p>3.1.1</p> <p>3.2.1</p> <p>3.3.1</p>

	(e.g., line up students; pass out the playground balls to students to see how many students do not receive one). Check reasonableness of an estimation by acting it out, using pictures, or physical models.		(e.g., line up students; pass out the playground balls to students to see how many students do not receive one). Check reasonableness of an estimation by acting it out, using pictures, or physical models.	
Communication	<p>Use a two-column chart to organize data (e.g., one column for student names and tally marks in the other to represent which students are assigned a ball) for the classroom with teacher guidance.</p> <p>Use physical objects or pictures to build bar graphs to answer a question generated by the class (e.g., how many of each kind of pet do we own?).</p> <p>Explain or represent ideas using mathematical language from:</p> <ul style="list-style-type: none"> ○ Number sense (e.g., numbers 1 to 10) [1.1.1]; ○ Measurement (e.g., compare objects to describe relative size) [1.2.1]; ○ Geometric sense (e.g., name objects based on their characteristics – I have four equal sides, what am I?) [1.3.1]; ○ Algebraic sense (e.g., create a pattern such as AB). [1.5.1] 	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Use a two-column chart to organize data (e.g., one column for student names and tally marks in the other to represent which students are assigned a ball) for the classroom with teacher guidance.</p> <p>Use physical objects or pictures to build bar graphs to answer a question generated by the class (e.g., how many of each kind of pet do we own?).</p> <p>Explain or represent ideas using mathematical language from:</p> <ul style="list-style-type: none"> ○ Number sense (e.g., numbers 1 to 10) [1.1.1]; ○ Measurement (e.g., compare objects to describe relative size) [1.2.1]; ○ Geometric sense (e.g., name objects based on their characteristics – I have four equal sides, what am I?) [1.3.1]; ○ Algebraic sense (e.g., create a pattern such as AB). [1.5.1] 	<p>4.2.1</p> <p>4.2.2</p>
Connections	<p>Organize data collections (e.g., bar graph, sorted groups) and compare data using comparative language. [1.1.2, 1.4.3]</p> <p>Sort objects based on chosen attribute and create a simple AB pattern using the sorted objects. [1.3.2, 1.5.1]</p> <p>Identify different representations of a number to 20 (e.g., numerals, pictures, physical models). [1.1.1]</p> <p>Express stories involving addition (e.g., join) with models, pictures, and symbols. [1.1.5]</p> <p>Describe how math is used in science when a number of objects are needed for an experiment or measurement is used to illustrate change.</p> <p>Identify patterns in a piece of artwork.</p> <p>Generate examples of mathematics in everyday life:</p> <ul style="list-style-type: none"> ○ counting (e.g., the number of people ahead of us in a line); ○ sorting things (e.g., grouping socks by color in order to match them up); 	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Organize data collections (e.g., bar graph, sorted groups) and compare data using comparative language. [1.1.2, 1.4.3]</p> <p>Sort objects based on chosen attribute and create a simple AB pattern using the sorted objects. [1.3.2, 1.5.1]</p> <p>Identify different representations of a number to 20 (e.g., numerals, pictures, physical models). [1.1.1]</p> <p>Express stories involving addition (e.g., join) with models, pictures, and symbols. [1.1.5]</p> <p>Describe how math is used in science when a number of objects are needed for an experiment or measurement is used to illustrate change.</p> <p>Identify patterns in a piece of artwork.</p> <p>Generate examples of mathematics in everyday life:</p> <ul style="list-style-type: none"> ○ counting (e.g., the number of people ahead of us in a line); ○ sorting things (e.g., grouping socks by color in order to match them up); 	<p>5.1.1</p> <p>5.1.2</p> <p>5.2.1</p> <p>5.3.1</p>

	<ul style="list-style-type: none"> ○ comparing things (e.g., who has the biggest piece of cake for dessert, or who is tallest/shortest in the family); ○ pointing out patterns (e.g., in clothing, fence posts, designs on buildings). <p>Identify objects based on a description of their geometric attributes (e.g., buildings have sides; some windows are shaped like a rectangle).</p> <p>Describe the location of objects relative to each other (e.g., in, out, over, under, school bus stops next to each other).</p>		<ul style="list-style-type: none"> ○ comparing things (e.g., who has the biggest piece of cake for dessert, or who is tallest/shortest in the family); ○ pointing out patterns (e.g., in clothing, fence posts, designs on buildings). <p>Identify objects based on a description of their geometric attributes (e.g., buildings have sides; some windows are shaped like a rectangle).</p> <p>Describe the location of objects relative to each other (e.g., in, out, over, under, school bus stops next to each other).</p>	
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Adopted Instructional Materials

Pre-kindergarten and Kindergarten:

Growing with Mathematics, The Wright Group/McGraw Hill

First Grade through Fifth Grade:

Everyday Mathematics, The Wright Group/McGraw Hill

Sixth Grade through Eighth Grade:

Connected Mathematics Program, Prentice Hall

Accelerated Mathematics, SRA (Supplemental, not primary instructional materials)

Algebra 1, Prentice Hall, 2004 (Honors Algebra, 8th grade)

Ninth Grade through Twelfth Grade:

Pre-Algebra, Prentice Hall, 2004

Algebra 1, Prentice Hall, 2004

Geometry, Prentice Hall, 2004

Geometry, Houghton Mifflin, 1978 (Honors Geometry, 9th grade)

Algebra 2, Prentice Hall, 2004

Precalculus: Numerical, Graphical, Algebraic, Pearson/Prentice Hall, 2004

Calculus: Numerical, Graphical, Algebraic, Prentice Hall, 2003